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Talk information:

Title: A New Retrieval Algorithm for OMI NO₂: Tropospheric Results and Comparisons with Measurements and Models

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Abstract: Nitrogen oxides (NO_x = NO + NO₂) are important atmospheric trace constituents that impact tropospheric air pollution chemistry and air quality. We have developed a new NASA algorithm for the retrieval of stratospheric and tropospheric NO₂ vertical column densities using measurements from the nadir-viewing Ozone Monitoring Instrument (OMI) on NASA's Aura satellite. The new products rely on an improved approach to stratospheric NO₂ column estimation and stratosphere-troposphere separation and a new monthly NO₂ climatology based on the NASA Global Modeling Initiative chemistry-transport model. The retrieval does not rely on daily model profiles, minimizing the influence of a priori information. We evaluate the retrieved tropospheric NO₂ columns using surface in situ (e.g., AQS/EPA), ground-based (e.g., DOAS), and airborne measurements (e.g., DISCOVER-AQ). The new, improved OMI tropospheric NO₂ product is available at high spatial resolution for the years 2005-present. We believe that this product is valuable for the evaluation of chemistry-transport models, examining the spatial and temporal patterns of NO_x emissions, constraining top-down NO_x inventories, and for the estimation of NO_x lifetimes.